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**SCIENCE AND TECHNOLOGY**

**No. 78**

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19 January 1981

# CHINA REPORT

## SCIENCE AND TECHNOLOGY

No. 78

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## NATIONAL DEVELOPMENTS

### SCIENCE SYMPOSIUM PUTS PROPOSALS TO GOVERNMENT

OW091314 Beijing XINHUA in English 1240 GMT 9 Dec 80

[Text] Hefei, December 9 (XINHUA)—More than 500 delegates to a recent national science symposium here have proposed more active participation by scientists in the country's planning.

Among the proposals they put to the government are:

--That the state and provincial authorities establish advisory centers to help with policy and decision making.

--That a committee of specialists be set up to plan and submit to the government projects for China's scientific, technological and social development.

--That scientists and technicians have greater mobility and free choice of jobs.

--That the government give more money for science and education and encourage the development of talented people.

--That the State Scientific and Technological Commission should seek advice from specialists on improvements in the administration of the country's scientific programs.

--That academies and other higher learning establishments should train people for top administrative posts.

The eight-day symposium dealt with three scientific disciplines which have attracted much attention in China in recent years.

The subjects are the science of sciences (the study of the laws governing science and technology and their relationship to social phenomena--also known in the United States as the "sociology of science"), futurology and rencaiology (the study of making the best use of people with special training).

The scientists debated how these disciplines are related to social studies, economics, management, military affairs, education, medicine and planning of China's current drive for modernization. More than 300 papers were presented at the symposium.

The scientists also discussed the scientific methodology of policy-making, future problems likely to confront the Chinese Communist Party, and the education of gifted children, and the future composition of the country's leadership.

CSO: 4020

## NATIONAL DEVELOPMENTS

### DIRECTOR OF ACOUSTICS INSTITUTE INTERVIEWED

OW220736 Beijing XINHUA in English 0720 GMT 22 Dec 80

[Text] Beijing, December 22 (XINHUA)--"China is at a big turning point. As a scientist, I'm confident and very optimistic about China's modernization," said 75-year-old Dr. Wang Dezhaoh, director of the Acoustics Institute of the Chinese Academy of Sciences, in an interview with XINHUA today.

This was a sober-minded analysis, he said and gave some recent work done at the institute to illustrate.

Under his guidance, researchers have made creative studies in sound propagation in shallow water. Five papers of the institute were cited by D. E. Weston, a well-known British acoustician, in a paper on international progress in the past 15 years in the study of acoustics. A special computer for sonar study, an acoustic alarm, an all-digital voice coder and an acoustic shot position indicator made by the institute are all among advanced world levels. The surface acoustic wave filter increases the pulse compression radar ranging area by 3.5 times and the resolution by 5 times.

Energetic and cheerful, Dr. Wang in recent years has gone to a number of international science forums, travelling to the Democratic People's Republic of Korea, Japan, France, Australia, Austria and Hungary.

In recognition of his scientific achievements, he was appointed in 1978 a member of the group of eminent scientists and technologists under the director general of UNESCO.

In the current drive to reform institutional management, Dr. Wang Dezhaoh has full authority over the management of the Acoustics Institute. A total of 33 research projects have been completed this year, of which 11 are of significant value for China's scientific development. "We are trying to modernize China's acoustics research," he said. He encourages the research staff to probe into the discipline's frontier areas.

Dr. Wang Dezhaoh's optimism as one of China's senior scientists, he said, was based on his view that "the Chinese Communist Party has vitality. The party itself is overcoming its own mistakes and the disaster caused by the ten years of the Cultural Revolution. China's hope lies here."

Dr. Wang studied in France in the late 1930's and worked in the National Center for Scientific Research and in the Paul Langevin Laboratory in Paris before he returned to China in 1956.

Despite his advanced age, he led a group of researchers on a science ship to the South China Sea this year, conducting China's first study of deep sea sound propagation. He plans to go to sea again next year for a follow-up study.

"After I returned to China the first thing I did was to train young scientists." Dr. Wang Dezhaohand-picked 100 university students in 1958 to be his post-graduate students. They now make most of the institute's research staff. Shang Erchang, one of his students and an associate research fellow now, has done successful research into underwater internal waves. This project drew favorable comments at the Tenth International Acoustics Congress in Sydney, Australia, last July.

Although his day is crowded with work, Dr. Wang sometimes relaxes in the evening playing the violin--"a life-long hobby"; or listens to his wife, Li Huinian, a retired vocal professor of the Central Conservatory, playing piano in the drawing room of their five-room flat. He does not miss many philharmonic concerts. "Music and acoustics are part of the same thing," he said with a smile.

CSO: 4020

## NATIONAL DEVELOPMENTS

### ANHUI SCIENTIFIC, TECHNOLOGICAL ASSOCIATION CONGRESS ENDS

#### Congress Activities

Hefei Anhui Provincial Service in Mandarin 1100 GMT 26 Dec 80 JW

[Excerpt] The Third Congress of the Anhui Scientific and Technological Association closed on 26 December after a 5-day meeting. The meeting adopted a decision of the Third Congress of the Anhui Provincial Scientific and Technological Association as well as regulations on setting up scientific and technological associations in factories and mines and on organizing associations in the rural areas for the popularization of science there. The meeting put forward valuable proposals on environmental protection, energy, human resources and other issues. During the meeting, Vice Governor of Anhui Yang Jike made a speech on how to readjust the work of the association. Attending the closing ceremony were Su Yu and Lan Ganting, secretary and deputy secretary of the provincial party committee; Ma Changyan, vice chairman of the provincial people's congress; Meng Jiaqin, vice governor of Anhui; Nie Chunrong, secretary of the secretariat of the National Scientific and Technological Association, and leading members of the provincial military district and departments concerned.

#### Resolution Adopted

Hefei Anhui Provincial Service in Mandarin 1100 GMT 26 Dec 80 OW

[Excerpt] The Third Congress of the Anhui Scientific and Technological Association adopted a resolution on 26 December 1980. It says that the association will from now on promote academic exchanges at home and abroad; energetically popularize scientific and technological knowledge; discover, train and recommend technical personnel; and be an adviser to the party in the scientific and technological field. The resolution adds that the Scientific and Technological Association must truly represent the interests of all scientists and technicians, be concerned with their livelihood, work and study, and promptly reflect their demands. It appeals to all scientists and technicians throughout Anhui Province to rally more closely around the CCP and do their utmost for Anhui's modernization.

CSO: 4008

## NATIONAL DEVELOPMENTS

### ELECTRONICS SOCIETY HOLDS NATIONAL CONGRESS

OW240305 Beijing XINHUA Domestic Service in Chinese 1413 GMT 23 Dec 80

[Excerpts] Beijing, 23 Dec (XINHUA)—The Chinese Electronics Society held the first national congress of activists in popularizing electronics science in Beijing from 18 to 23 December. The electronics society will, through this congress and other activities, promote the work of developing electronics science and technology in our country.

The Chinese electronics society and electronics societies in other places have made noticeable achievements in the past 2 or 3 years in helping amateur enthusiasts of electronics set up organizations to popularize electronics science and in disseminating knowledge of electronics science and technology. All this was accomplished through publications, documentary films and training classes and report meetings.

To exchange experience in the work of popularizing electronic technology, review achievements, commend the advanced personalities, formulate the electronic science popularization plan for 1981, further promote the work, the Chinese electronics society called this national congress of activists in popularizing electronic science. Participating comrades held that the popularization and application of electronics science and technology are most essential to the four modernizations. They pledged to make new contributions in promoting electronics science and technology.

Under the leadership and support of the Scientific and Technical Association of China a center for popularizing electronics science and technology has been set up and preparations are made for forming a national federation of electronics enthusiasts.

CSO: 4008

## NATIONAL DEVELOPMENTS

### BRIEFS

**ELECTRONICS JOURNALS' COMMENDATIONS**--Beijing, 29 Dec (XINHUA)--The Chinese Electronics Society recently held a national meeting of activists who popularize electronics science. Two electronics journals--WU XIAN DIAN [RADIO] and DIAN ZI SHI JIE [ELECTRONICS WORLD]--were commended at the meeting. WU XIAN DIAN which began publication in 1955 now has 1.86 million subscribers. DIAN ZI SHI JIE, inaugurated in 1979, now has more than 700,000 subscribers. [Beijing XINHUA Domestic Service in Chinese 0209 GMT 29 Dec 80 OW]

**ANHUI SCIENCE ASSOCIATION**--The third committee of the Anhui Provincial Scientific and Technical Association held its first session on 27 December. The meeting elected the chairman, 10 vice chairmen and 40 standing committee members of the association. The chairman is (Yang Chengzong) and the vice chairmen are (Wei Ding), (Li Zhimin), (Zhang Ke), (Xu Yuangao), (Wang Qilie), (Chai Dengbang), (Geng Zhaolin), (Wang Jingcao), (Cai Bingjiu), and (Liu Zengdian). [Hefei Anhui Provincial Service in Mandarin 1100 GMT 28 Dec 80 OW]

**GUIZHOU AWARDS CEREMONY**--On the morning of 15 December, the Guizhou provincial people's government held the 1980 awards presentation ceremony in its hall. Citations, honorable certificates and bonuses were presented to units and individuals which scored a total of 210 scientific and technological achievements. Leading comrades of the provincial CCP committee, provincial people's congress standing committee, provincial government and provincial military district, including Su Gang, Xu Jiansheng, Wang Chaowen, Miao Chunting, Li Tianguai and He Ming, attended the gathering to congratulate them. Provincial Vice Governor Qin Tianzhen spoke at the gathering. These achievements were selected after the provincial rally on science and technology in 1978. The 210 prizes comprised one first prize, which won a bonus of 1,500 yuan, 15 second prizes each of which won a bonus of 1,000 yuan, 92 third prizes each of which won a bonus of 500 yuan, and 102 fourth prizes each of which won a bonus of 200 yuan. The total amount of the bonuses was 82,900 yuan. [HK251414 Guiyang Guizhou Provincial Service in Mandarin 2315 GMT 15 Dec 80 HK]

**HEBEI SCIENTIFIC RESEARCH FORUM**--Hebei Province recently held a forum on scientific research work in the universities, colleges and research units. The forum pointed out: At present, all universities, colleges and research units throughout the province should work together to promote scientific research. Li Feng, Hebei provincial vice governor, attended the forum and spoke. The forum also discussed orientations and key subjects of scientific research work in the province. [Shijiazhuang Hebei Provincial Service in Mandarin 0430 GMT 3 Dec 80 HK]

**NEW SOCIETY FORMED**--Chengdu, 18 Dec (XINHUA)--A national nuclear fusion and plasma physics academic report meeting was held recently in Chengdu. At the meeting, the China Nuclear Fusion and Plasma Physics Society was established. The first board of directors of the society was elected at the meeting. The board is composed of 43 directors, and Li Zhengwu [2621 2973 2976] was elected chairman of the board. Controlled nuclear fusion research began in our country in the mid-1950's. At present, a scientific research contingent has been formed, more than 20 types of small and medium-sized experimental devices have been made and research work has developed in two main directions--magnetic confinement and inertial confinement scientists presented more than 180 papers at the meeting which showed that controlled nuclear fusion research in our country has made new progress in theoretical, experimental and engineering fields. [Text] [OW181005 Beijing XINHUA Domestic Service in Chinese 0152 GMT 18 Dec 80]

**RARE EARTH SOCIETY**--The China Rare Earth Society was established on 5 December in Beijing. Zhou Chuandian, vice minister of metallurgical industry, was elected chairman of the board of the society. At the first academic meeting of the society, 173 academic papers were read and discussed. [OW091009 Beijing Domestic Service in Mandarin 1200 GMT 6 Dec 80 OW]

**COUNTY SCIENTIFIC BODIES**--Beijing, 28 Dec (XINHUA)--Nearly two-thirds of China's counties have established their county-level scientific associations, according to the conference on the work of county-level scientific associations held by the Chinese Scientific and Technical Association in Beijing from 17 to 24 December 1980. These county-level scientific associations are playing a role in local economic development. [Beijing XINHUA Domestic Service in Chinese 0333 GMT 28 Dec 80 OW]

**JIANGXI SCIENTIFIC RESEARCH FORUM**--The Jiangxi Provincial CCP Committee held a forum on scientific research on the afternoon of 29 November. Attending the forum were Ma Jikong, Di Sheng, Xu Qin and other comrades in charge of scientific research work. The Jiangxi vice provincial governor presided over the forum. Everybody freely aired their views and exchanged ideas on planned parenthood work, nurses training, education and agricultural production. [Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 30 Nov 80 HK]

**SHANGHAI LASER STUDY**--Shanghai, 5 Dec (XINHUA)--Shanghai's Fudan University and Shanghai Laser Technological Institute have established closer relations in helping each other in teaching and research. The institute has sent five researchers to the university to undergo training in basic courses. Meanwhile, necessary preparations have also been made by the institute to accommodate students from the university on experimental assignments. [Beijing XINHUA Domestic Service in Chinese 0209 GMT 5 Dec 80 OW]

**GANSU INFRARED TELEVISION MICROSCOPE**--The Pingliang Semi-Conductor Equipment Research Institute has produced China's first infrared television microscope. By applying the microscopic and infrared techniques, this infrared television microscope can instantly and accurately reveal through a television screen the internal condition and external defects of semiconductor equipment. [Lanzhou Gansu Provincial Service in Mandarin 1125 GMT 16 Dec 80 SK]

JIANGXI EXPERTS PROMOTION MEETING--On the morning of 18 December, Comrade Bai Dongcai presided over the meeting of the governor's work to listen to the report on promoting science and technology cadres to senior posts and to approve the promotion of 141 science and technology backbone elements. They were promoted to senior engineers, assistant research personnel, associate professors and doctors. The average age of these people is 53.8 years old. The oldest is 78 while the youngest is 41. These science and technology personnel have all made contributions in science and technology. The Jiangxi Provincial CCP Committee and the Jiangxi provincial people's government have paid very serious attention to promoting these people. [Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 21 Dec 80 HK]

SHANGHAI SCIENTIFIC RESEARCH--The scientific and technological associations in various wards and suburban counties in Shanghai and 23 academic societies and research institutes under the Shanghai Municipal Scientific and Technological Association have worked on many technical problems in connection with the four modernizations in Shanghai. They have organized more than 300 academic activities in 1980 and discussed such subjects as development of high-temperature water supply and use of residue heat in electric power generation. They made suggestions on acceleration of the development of urban gas supply, construction of an electric power station using tidal energy north of the estuary of the Yangtze River and construction of nuclear power plants in Shanghai and east China region. [OW301317 Shanghai City Service in Mandarin 2300 GMT 27 Dec 80 OW]

XINJIANG COMPUTER CENTER--An electronic computer center completed with all domestically produced equipment has been built in Urumqi Municipality, Xinjiang region. The center is built for meeting the needs of Xinjiang's developing scientific research projects. The computer can do 210,000 operations per second. The center was funded by the regional Scientific and Technological Commission with the assistance of the Xinjiang Physics Research Institute of the Chinese Academy of Sciences. [Urumqi Xinjiang Regional Service in Mandarin 1300 GMT 3 Jan 81 OW]

CSO: 4008

## PHYSICAL SCIENCES

### BRIEFS

**ASTRONOMERS ON CLIMATIC CHANGES**--Nanjing, December 20 (XINHUA)--Chinese astronomers have challenged the view that the lining up of the nine planets in the solar system expected within two years will give rise to major climatic changes and earthquakes. The planets will come into alignment on approximately May 15, 1982. The hypothesis that this will cause abnormal climatic changes on earth is "groundless," according to scientists at China's Zijingshan (Purple Mountain) Observatory in Nanjing. Activities of the moon and other planets affect the earth mainly through tide-raising force. Solar force accounts for 46 per cent of the earth's tide-raising force and that of all the other planets is very insignificant, the astronomers said. Even with all nine planets in line, their total tide-raising force is only 1.3-1000th of the solar force, so small that it cannot cause major climatic and seismological reactions, they said. The phenomenon will not cause exceptional solar activities either, they said. [Text] [Beijing XINHUA in English 0712 GMT 20 Dec 80 OW]

CSO: 4020

## APPLIED SCIENCES

### PRC MAKES OPTICAL FIBER USED IN COMMUNICATIONS

OW260623 Beijing XINHUA Domestic Service in Chinese 0333 GMT 25 Dec 80

[Text] Shanghai, 25 Dec (XINHUA)—Two key materials for optical fiber communications—multi-mode and gradient optical fiber [duo mo ti du guang xian 1122 2875 2748 1653 0342 4960] of the phosphosilicon series and four- and six-core optical fiber cables—passed the quality test on 21 December in Shanghai and will soon be put into production and supplied to users. This marks a major step from scientific research to application in China's optical fiber communications technology.

These two materials are information-transmitting media in optical fiber communications. They are made by the Xinhua Glass Plant in Shanghai and the Shanghai Cable Research Institute of the First Ministry of Machine Building based on the research results of the Shanghai Silicate Chemistry Technology Institute of the Chinese Academy of Sciences. Their principal physical and mechanical properties are approximately the same as foreign products.

In ancient times man used beacon fires and courier horses as means of communications. With the invention of the telegraph and telephone in the 19th century, a new path was opened for modern communications. In the 1960's scientists began to use laser beams to transmit information through the atmosphere, thus creating a brand new technology—optical communications. In 1970 the United States made the world's first optical fiber from quartz glass. This was followed by the success of a series of optical communications experiments, which brought about a new revolution in communications technology. A single piece of optical fiber thinner than a hair can transmit hundreds of thousands of telephone messages simultaneously. Optical fiber communications, noted for wide application and strong resistance to interference, have advanced from the experimental stage to the application stage in some industrially developed countries.

In our country, research work in this regard began in 1974. Under the unified planning of the State Scientific and Technological Commission and the Ministry of Posts and Telecommunications, a cooperative project involving more than 40 research organizations, higher educational institutions and factories was organized in May 1978 by the Shanghai Municipal Scientific and Technological Commission. Through a year of efforts, a 1.8-kilometer experimental section for optical fiber communications, the first of its kind in our country, came into being. Testing has been satisfactory; the voice message transmitted are clear. This experimental section has now been included as a part of Shanghai's communication network.

Success in making the two key materials for optical fiber communications is a major step for China from scientific research to the application stage in optical communications technology. Meanwhile, new progress in this research field has also been made in Beijing, Wuhan and other places.

CSO: 4008

## APPLIED SCIENCES

### PRC INSTITUTE DEVELOPS LARGE COLOR TV CRYSTAL

OW220724 Beijing XINHUA in English 0715 GMT 22 Dec 80

[Text] Beijing, December 22 (XINHUA)—It is good news for color T.V. producers as an exceptionally big crystal has been produced by a laboratory of the Acoustics Institute of the Chinese Academy of Sciences here.

The lithium niobate crystal has a diameter of 100 mm, reaching advanced world levels.

"Such big crystals are being made only by a few countries such as the United States and Japan," said one scientist of the high frequency bulk wave laboratory.

The research group is headed by Shi Zhongjian, 44, an associate research fellow who has been working on the fundamental theories involved in crystal-making for the last ten years.

The crystal is used as a filter in color T.V. sets. Wide application of crystals is made in acoustics, radar, lasers, computers, electronics, nuclear reactors and space science.

The Bell Laboratory of the United States first reported its success in producing a lithium niobate crystal in 1966. The diameter then was 20 mm.

Shi Zhongjian and his colleagues began their research in 1970 and produced the first, 25 mm in diameter, in 1974. The diameter had been gradually enlarged in recent years from 50 mm to 75 mm.

The crystals produced by the acoustics laboratory are not only large in diameter but varied in shape. A French scientist who visited the laboratory said that he had never seen tube-shaped crystals such as they produce anywhere else in the world.

They are also trying to make spiral crystals which have the property of springs. "This is a valuable and new subject of research in crystallography," Shi Zhongjian said. "It might lead to the making of some new high frequency bulk wave devices."

CSO: 4020

TECHNIQUE FOR PREVENTING LOSS OF SYNCHRONY BY ELECTRIC MOTORS DEVELOPED

Beijing GUANGMING RIBAO in Chinese 30 Nov 80 p 1

[Article by Sun Guanlong (1327 7070 7893): "New Technique for 'Protection of Synchronous Electric Motors From loss of Synchrony and Under-Load Automatic Resynchronization' Developed"]

[Text] Since the new technique of "protection of synchronous electric motors from loss of synchrony and under-load automatic resynchronization" developed by Jiang Zongdao [5592 1350 6670] and other comrades of the Second Ministry of Machine Building was put into industrial operation in 1963, it has given 17 years of stable operation; it has excellent characteristics and has produced excellent technical and economic results, so that it is of great practical importance.

Synchronous electric motors are an important type of electrical equipment used extensively in chemical engineering, the oil industry, metallurgy, electric power, the coal industry, military engineering, light textiles, pharmaceuticals and other departments. They have one essential condition for normal operation, namely that their speed must be maintained in "strict synchrony" with the frequency of the power system. When external interference produces voltage or frequency fluctuations in the system, this synchrony may be disrupted and the motor may become out of synchrony. When loss of synchrony is mild, it may cause interruptions of production, and confusion in the manufacturing flow; when it is serious it may lead to breakdowns of the electrical equipment or other serious occurrences. In a petrochemical plant in Beijing, for example, a malfunction lasting 1.5 seconds threw all of the synchronous electric motors out of synchrony, and the resulting economic loss amounted to more than 1 million yuan. Accordingly, synchronous motors need suitable "synchrony protection equipment." Until now, more than 90 percent of our country's synchronous electric motors used 1940's and 1950's synchrony protection techniques and equipment, which lagged far behind the needs of modernized production. Starting in the 1960's, various countries exerted themselves to develop new-type synchrony protection technologies and equipment. Such research began rather early in our country, and successes were achieved and used in production rather early; since October 1960, when Comrade Jiang Zongdao began his research, he has carried out more than 400 simulation experiments and more than 150 on-site industrial tests, achieving gratifying results.

As of October of this year, this new technique was being used on several dozen synchronous motors of the various types used in production, which have been operating correctly for more than 10 years, increasing production safety and continuity and electrical supply reliability and avoiding the losses which would be produced by loss

of synchrony. For example, on 24 February 1978 there was a malfunction in the electrical system of a certain plant in the Second Ministry of Machine Building, causing all of its synchronous motors to lose synchrony and stop, but because the new technique was used on the main production equipment, it assured continuous production by the plant in question, decreasing fund losses by a million yuan. On 15 January 1980 there was a malfunction in a certain chemical engineering plant in Shanghai, and the old system of synchronous motors which lacked the new technology all lost synchrony so that production by that system stopped entirely, causing an economic loss of 100,000 yuan; but because the new system was provided with the new technology, there was a smooth automatic under-load resynchronization of the motors, which assured safety and continuous production.

This new technique differs radically from older types of synchrony protection and is also different from techniques previously used abroad; it not only can guarantee safety of electrical machinery, but can also prevent it from stopping and assure continuous production, so that but technically and theoretically it embodies our country's unique approach and argumentation.

In order to disseminate this new technique, recently the Second Ministry of Machine Building decided to set up in its plant No 261 a "synchronous electrical machinery motor operating technology research service" to serve the various industrial departments.

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CSO: 4008

## APPLIED SCIENCES

### BRIEFS

**FIRST CONGRESS ENDS--**Tianjin, Dec 19 (XINHUA)--The China Institute of Communications, set up two years ago to study advanced telecommunications and sponsor academic exchanges, now has 23 branches with 6,485 members throughout China, with six more branches to be set up soon. This was announced by Wang Zigang, minister of posts and telecommunications, at the first national congress of the institute which concluded here today. Attending the congress were 290 delegates from the fields of posts and telecommunications, national defense, communications and education. Wang Zigang was elected president of the institute. The China Institute of Communications was established in May 1978. It was formerly called the China Posts and Telecommunications Society, and changed its [as received] name in June this year. It publishes the magazines "TELECOMMUNICATIONS JOURNAL" and "MODERN TELECOMMUNICATIONS." [Text] [OW191242 Beijing XINHUA in English 1224 GMT 19 Dec 80]

**ARCHITECTURAL SOCIETY CONGRESS--**Beijing, Dec 21 (XINHUA)--The architectural society has called for designing graceful, comfortable and convenient buildings and houses and breaking with the monotonous building patterns which have prevailed in Chinese cities in recent decades. At the society's fifth congress, held recently in Beijing, a consensus emerged that Chinese architecture has suffered too much from restrictions and conventions. Architects at the meeting also criticized the practice of extravagant buildings for high leaders and foreign guests without considering the costs. Participants suggested that building patterns should be created to suit Chinese circumstances, drawing on advanced foreign experience where appropriate. However, they criticized the tendency of copying foreign designs blindly, and the idea that high buildings are synonymous with the modernization of architecture. Professor Yang Tingbao, a leading Chinese architect, was elected new president of the architectural society. Founded in 1953, the society now has 17 academic committees covering such areas as design, city planning, architectural structures, architectural construction, gardening and tree planting. [Text] [Beijing XINHUA in English 0141 GMT 21 Dec 80]

**SHANGHAI AUTOMATIC DIALING--**New service of automatic dialing for long-distance phone calls was started in Shanghai City on 16 December. The business department of Shanghai Long-Distance Telephone Bureau will handle calls from Shanghai to those in Beijing, Tianjin and Nanjing whose telephone numbers are registered. Calls can be made by directly dialing the numbers without going through the long-distance telephone operators. [Shanghai City Service in Mandarin 2300 GMT 15 Dec 80]

## LIFE SCIENCES

### IMPROVEMENT IN CARE FOR RURAL CHILDREN REPORTED

OW240837 Beijing XINHUA in English 0815 GMT 24 Dec 80

[Text] Zhengzhou, December 24 (XINHUA)—Results of a three-year program of improvement of health conditions among 140,000 rural children under the age of 7 in 14 provinces, 3 municipalities and 2 autonomous regions are summed up here at a recent meeting attended by some 200 leading pediatricians and health bureau directors. The efforts are a strong support for the country's call for "one child for a couple," the participants said.

The Institute of Pediatrics started this campaign in 1977 as part of a national health program. The first stage of the work covers:

- raising the standard of rural barefoot doctors through short training courses;
- regular prenatal and newborn baby care;
- establishing pediatric clinics;
- better control of infectious diseases through preventive injections.

As a result, infant mortality has dropped. A general increase in height and weight has been recorded, and 50 percent less children are suffering from rickets and malnutrition, according to the institute's report.

Two hundred million Chinese children live in rural areas. Health check-ups among rural children organized by the institute in 1977 showed that they were less strong in physique than city children. A 1974-1976 analysis from 12 provinces and cities reported that new-borns made up about one-fourth of the total deaths of children under seven.

CSO: 4020

## LIFE SCIENCES

### RESEARCHERS INCREASE KNOWLEDGE OF STOMACH CANCER

OW191250 Beijing XINHUA in English 1227 GMT 19 Dec 80

[Text] Beijing, December 19 (XINHUA)--A large-scale two-year investigation in selected rural areas of China inhabited by 19 million people has given Chinese cancer researchers new insight into the epidemiological factors and possible causes of one of the country's most threatening illnesses --stomach cancer.

The investigation, which covered more than 100 people's communes in 12 counties, shows that mouldy food, bad eating habits, smoking, alcohol drinking, smoked food and a high-salt diet are "dangerous factors" which may lead to stomach cancer, according to Professor Zhang Rufu of the Beijing Cancer Institute. Fresh vegetables, animal protein and vegetable oil can be regarded as "safe factors," said Professor Zhang, one of the leaders of the survey.

However, he added, dietary and environmental factors alone cannot explain why China's stomach cancer rates vary so greatly among groups of people living in the same conditions and following similar eating patterns. The crucial factor, investigators believe, is a stomach ailment known as "atrophic gastritis," which inflames the membranes of the stomach.

The investigators found that 30 percent of the people in high-risk stomach cancer areas are suffering from all kinds of chronic stomach diseases, and predominantly atrophic gastritis. This ailment is generally found among people aged 10 to 15 years younger, on the average, than those suffering from stomach cancer. Since scientists found a clear correlation between the morbidity rates of atrophic gastritis and the death rate of stomach cancer, adjusted for age, they have concluded that atrophic gastritis is probably an incubator of the cancer.

Much of the investigation focused on the implications of the presence of nitrite in patients with chronic stomach diseases, the result of bacterial action on environmental nitrate taken in food and water. Professor Zhang said it appears that atrophic gastritis creates favorable conditions for the synthesis of a carcinogenic nitroso compound in the stomach.

The amount of nitrate in the water supplies of high-risk stomach cancer areas was found to be generally higher than in low risk areas—but more strikingly,

the amount of nitrite in the gastric juices of chronic gastritic patients in high risk areas was found to be exceptionally higher than that of such patients in low risk areas.

Cigarette smoking and eating fungus-contaminated food will compound the risks, the study found. The fungus contamination of foodstuffs is serious in all places chosen for the investigation, the investigators found. But the pre-dominant toxin-producing fungus in the fasting gastric juice of chronic stomach disease sufferers is *aspergillus versicolor* which is found much more in atrophic gastritic patients in high risk areas than those in low risk areas.

Investigators also discovered high levels of nickel, selenium and cobalt and a close ratio between calcium and sulphate levels in the soil and water of high-risk areas. These also may be related to the incidence of stomach cancer, they believe.

The investigation was a cooperative effort by the Beijing Institute of Cancer Research and 30 regional medical institutions, involved medical workers in the fields of epidemiology, chemistry, mycology, pathology, pathophysiology and clinical medicine.

Its focus was China's most prevalent kind of malignant tumor. A previous retrospective survey shows that of some 800,000 Chinese who die of cancer each year, nearly 200,000 are victims of stomach cancer.

Professor Zhang said that although the results of the investigation are preliminary, they may help guide the country in preventing and lowering the incidence of stomach cancer. "Our investigation is just an effort to solve the problem, but it's the first of its kind," he said.

CSO: 4020

## LIFE SCIENCES

### BRIEFS

**BIO-MEDICAL ENGINEERING SOCIETY**--Beijing, 27 Nov (XINHUA)--The China Society of Bio-Medical Engineering has been set up after a 5-day meeting here, the GUANGMING DAILY reports today. Professor Huang Jiasi, president of the Chinese Academy of Medical Sciences, was elected chairman of the 49-member council of the academic organization. Bio-medical engineering is a new discipline which incorporates basic science, engineering technology and the study of human and animal organs and functions. A total of 370 dissertations and papers were presented at the meeting which ended on 24 November. They dealt with such subjects as material for medical use, bio-effects, bio-mechanics, artificial organs, medical instruments, ultra-sound and laser devices, information control and signals processing. [Beijing XINHUA in English 0725 GMT 27 Nov 80 OW]

**GUANGXI MINORITY MEDICAL CLASSES**--Nanning, 23 Nov (XINHUA)--Four secondary medical schools in south China's Guangxi Zhuang Autonomous Region have set up classes specially for students of minority nationalities. This is a new step taken by the region to train medical workers for the minority peoples who comprise 37.7 percent of its population. Two years ago a medical college for minority nationalities was established in Youjiang Prefecture. Three hundred junior middle-school graduates were enrolled in the new classes in the Bose, Liuzhou, Nanning and Hechi medical schools this year. The students are of the Zhuang, Miao, Yao, Dong, Gelao, Mulao, Maonan, Hui, Jing, and Yi nationalities. The new medical students will study 4 years in 2 disciplines, general medicine, and maternity and child care. They enjoy free tuition, lodging, food and medical treatment, and are provided with textbooks, clothes, shoes and other daily necessities. Upon graduation they will return to their own areas, where they will serve in county or commune medical units. [Text] [OW251525 Beijing XINHUA in English 0714 GMT 23 Nov 80 OW]

**GUANGXI MEDICINAL PLANT**--Nanning, November 15 (XINHUA)--Four new varieties of Maytenus, a plant with anti-carcinogenic properties, have been discovered in south China's Guangxi Zhuang Autonomous Region. The new varieties were found by members of the Guangxi Medicine Research Institute during a recent survey of a dozen counties in central and southern Guangxi. An evergreen plant, Maytenus grows luxuriantly in a warm and humid climate. Three anti-cancer components, Maytencin, Maytenpulin and Maytenpirin, have been extracted from the Maytenus plant and have been on animals to some effect. [as published] [Text] [OW161023 Beijing XINHUA in English 0700 GMT 15 Nov 80 OW]

MORE HOSPITALS FOR XIZANG--Lhasa, January 1 (XINHUA)--Tibet now has 19 city hospitals, more than 70 county hospitals and clinics in 90 percent of rural districts and communes, Tibetan authorities said this week. The region has nearly 3,500 doctors of Tibetan nationality and more than 1,000 Tibetan medical students have studied in Beijing, Shanghai and other cities. [Text] [Beijing XINHUA in English no time given 1 Jan 81 OW]

BEIJING BIRTH WEIGHT INCREASE--Beijing, 13 Dec (XINHUA)--The average weight of new-born infants has been rising over the past few decades, it was stated today by the Pediatrics Institute under the Chinese Academy of Medical Sciences. A survey conducted in the Beijing Maternity Hospital showed that the average birth weight of male infants is now 3.36 kilograms and that of female infants 3.26 kilograms. Earlier surveys in the urban districts in Beijing showed that in 1937, average male birth weight was 2.15 kilos and 3.09 for the female. In 1954, the corresponding averages were 3.27 and 3.21. Dr Wang Xiaoduan, director of the obstetrical department of the Beijing Maternity Hospital said that 70 percent of the infants were first-born because many Chinese families intend to have only 1 child. Gynecologists held that the tendency was connected with better prenatal care, hospital hygiene and special attention to high-risk pregnancies. The Beijing Maternity Hospital, beginning this year, has opened consultation service for high-risk pregnancies. [Text] [OW180643 Beijing XINHUA in English 0741 GMT 13 Dec 80 OW]

MEETING ON MALARIA PREVENTION--According to our source, the Shandong Provincial Experience Exchange Meeting on Preventing and Curing Malaria was held in Jinan from 16 to 21 December. After analyzing this year's malaria trends, the meeting set forth targets and measures for preventing and curing the disease in 1981. It urged leaders at all levels in the malaria-contracting areas to deal with this disease and to help malaria patients. They also called for campaigns on preventing and destroying mosquitoes. In malaria-stricken areas, efforts should be made to examine all people and give them necessary treatment. During malaria season efforts should also be made to give preventive inoculations or medicines to all people. The meeting also called for efforts to keep an eye on the development of this disease and to adopt effective preventive measures. Huang Shuze, vice minister of the Public Health Ministry, attended and addressed the meeting. He called on our province to consider preventing and curing malaria as an important task in disease control and to provide all necessary financial and manpower support. [Text] [SK250836 Jinan Shandong Provincial Service in Mandarin 2300 GMT 24 Dec 80]

QINGHAI SUPPLEMENTARY MEDICARE REGULATION--The Qinghai Provincial Financial and Public Health Departments jointly issued a supplementary regulation on the management of free medicare on 13 October. The regulation will become effective 1 January 1981. Station reporters recently called on the free medicare office of the provincial public health department asking a responsible comrade to explain the regulation. He said that during the last 17 years from 1963 to 1980 there has been no unified standard or regulation governing the management of the various medicare units, causing great waste of state funds. The new regulation does not differ significantly from the previous one. According to the new regulation, the annual per capita quota for free medicare is 30 yuan, an increase of 12 yuan over that provided in the current regulation. The regulation also provides that hospitals should make the best use of medicine available to them in writing prescriptions. If they have to use a certain medicine that is in short supply, they should purchase it for patients. [SK010009 Xining Qinghai Provincial Service in Mandarin 2330 GMT 29 Nov 80 SK]

## SCIENTISTS AND SCIENTIFIC ORGANIZATIONS

### PROVINCIAL SCIENTIFIC ASSOCIATIONS PROMOTE TECHNOLOGY ACTIVITIES

Guiyang GUIZHOU RIBAO in Chinese 17 Oct 80 p 1

[Article by Zhang Xiaodong [1728 2556 2639]: "All Levels of Provincial Scientific Associations Promote Science and Technology Activities"]

[Text] All levels of scientific associations and affiliated academic organizations are actively promoting science and technology activities and contributing to the advancement of scientific and technological standards in Guizhou and toward stimulating production and development.

Since its recovery in 1978, the provincial scientific association has added new committee members and strengthened its leadership and administrative structures to meet the working and developmental requirements of the new period. In the past 2 years, there has been considerable progress in all levels of scientific associations in the province and in their affiliated academic societies. To date, there have been 46 academic societies, research societies and associations reinstated or newly founded, 13 provincial level societies are being organized, and the combined membership has exceeded 12,000. Scientific associations have been reinstated or started in 35 prefectures, municipalities, counties and regions.

There has been participation by numerous science and technology workers in various academic activities in science development, in counseling and planning, and in proposing a number of scientifically-based recommendations geared toward vital and urgent topics in the four modernization construction of Guizhou. The provincial science association has also published an internal periodical called "Recommendations by Science and Technical Workers," 19 issues in print so far, to encourage proposals and suggestions from the scientific and technical staff. Practical recommendations based on actual experience of production and construction in Guizhou have been published in this periodical and received attention from provincial leaders and various departments. Some suggestions have been adopted.

Academic activities in Guizhou have been progressing vigorously over the past 2 years. Provincial societies have organized over 1,300 academic exchange meetings with more than 3,500 papers presented. Among these, 900 articles of higher quality have been selected and presented at national academic meetings. Last December, an agricultural science and technology forum was jointly held by the provincial scientific association, the provincial committee on agriculture and the provincial committee on technology. In this interdisciplinary meeting more than 50 specialists from 22 societies participated in the penetrating discussions on topics of how to

expedite agricultural developments in Guizhou. Over 100 beneficial suggestions that were proposed in the meeting have provided a positive effect in promoting provincial agriculture. In the many activities of academic societies, attention was given not only to the exploration and exchange of basic theories but also to problems centered around production. The science and technical workers have been called upon to conquer the bottlenecks in production.

In March 1980, the provincial highway society held a work conference on the Liberation automobiles. In this meeting the society secretary Yang Shouyue [2799 1343 1471], provincial transportation office engineer Liu Tsudian [0491 5261 3329] and their colleagues proposed a technical improvement plan to counter the problems of impaired engine power and reduced transportation efficiency of Liberation automobiles due to the high altitude of Guizhou. This plan will allow the Liberation CA-10B automobile to increase its capacity from 4 tons to 5 tons and 3 tons of trailer load. Technical personnel at the meeting studied the theoretical calculations and design principles of this proposed plan and performed on-site road tests. The plan was proved successful and the society therefore recommended to the transportation office that this plan be publicized in the province. Implementation experience showed an improved automobile power from the original 68.1 horsepower to 90.37 horsepower and gas consumption was reduced by 15 percent. This achievement has made a considerable contribution to the transportation industry in Guizhou.

Various levels of provincial science associations and affiliated societies have also conducted a variety of workshops, learning classes and training sessions to help raise the quality of the technical staff and to train the necessary manpower required in the four modernization movement. Statistics show that within the last year provincial societies have conducted 44 training classes and educated more than 2,800 people. The societies have also taken every opportunity to invite national experts to come to Guizhou for lectures and invited technical reports from foreign specialists who have come to assist our work, to travel or to visit relatives. They have also invited Guizhou scientists and technical people who had attended international conferences to report on the activities in foreign nations. All these efforts are aimed at providing a favorable atmosphere for the learning of advanced scientific technology.

Substantial efforts have been made by the various provincial scientific associations and technical societies in the dissemination of science knowledge. Science dissemination activities in Guizhou have been stepped up even more after the Party Central Committee issued the call for the "advancement of the scientific and cultural level of the entire Chinese nation." Since last year, all levels of scientific associations and academic societies have conducted 520 science-dissemination lectures to an audience of 160,000 and provided 5,800 showings of science education movies to an audience of 1.8 million. Science dissemination picture halls, wall posters and library reading rooms have been set up at a number of locations and they are well received by the masses. In coordination with various departments the provincial science association has also provided science and technology lectures to the leadership cadres in Guizhou and has had a positive influence on the learning of science by cadres at different levels. After the formation of the organization committee for the provincial association on creative activity in science dissemination, the committee has been actively promoting workers in science, technology, literature, and art to create literature and art for the

popularization of science. In addition to starting a new journal called POPULAR SCIENCE, the committee has also worked closely with newspapers, radio stations and publishers in its efforts to popularize knowledge of science. For the youths, a variety of lively science educational activities have been coordinated by science associations, education and athletic departments and the Communist Youth League. Science and technology groups have multiplied in many high schools and elementary schools in Guizhou. Under the guidance of teachers and with the assistance from councils of the science and technology counseling associations, a vast youth population is engaged in science learning and creative and competitive activities. A healthy atmosphere of learning science, loving science, and using science has been established among the youths.

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CSO: 4008

## SCIENTISTS AND SCIENTIFIC ORGANIZATIONS

### GUIDANCE TECHNOLOGY EXPERT JOINS BEIJING AVIATION COLLEGE

Beijing GUANGMING RIBAO in Chinese 17 Nov 80 p 2

[Article by Wu Zhuangzhi [0702 1104 1807]: "Beijing Aviation College Hires Wen Qixiang [3306 0796 4382] as Part-Time Professor"]

[Text] Famous Chinese expert on guidance technology Wen Qixiang [3306 0796 4382] was recently hired by Beijing Aviation College as a part-time professor.

Wen is currently a guidance technical advisor of the Fourth Ministry of Machine Building at the 1020 branch of its 10th Institute. He also holds such posts as standing trustee of the Chinese Institute of Electronics and committee chairman of the Guidance Society, Chinese Institute of Electronics. Wen Qixiang is one of the earliest workers in China to engage in the guidance enterprise. For over 30 years he has helped China establish a complete guidance system. He organized and administered research institutes and plants for guidance technology and is responsible for the development, design and production of numerous engineering projects and satellite guidance facilities. He provided accurate data and crucial services for the Chinese fleet in their successful completion of testing, monitor and recovery missions during the launch of carrier rockets. Wen has also translated over 30 articles including "Satellite Guidance System," "Landing Guidance," and "Communication, Guidance and Identification System." Among Wen's many technical and academic publications are: "Development of Radio Guidance Technology," "Development in Guidance Technology," and "Current Development Status of Electronic Guidance Technology."

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## Geology

AUTHOR: TANG Tianfu [0781 1131 4395]  
XUE Yaosong [5641 5069 2646]  
ZHOU Yangkang [0719 0111 1660]  
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TITLE: "The Characteristics of Carbonate Rocks and Their Sedimentary Environment of the Lower Tertiary Buxin Group in Sanshui Basin, Guangdong"

SOURCE: Beijing DIZHI XUEBAO [ACTA GEOLOGICA SINICA] in Chinese Vol 54 No 4, Nov 80 pp 249-259

TEXT OF ENGLISH ABSTRACT: The carbonate rocks of the lower Tertiary Buxin group in Sanshui Basin, Guangdong Province, spread along the basin's margin may be subdivided into seven deposit areas, where for the first time were found foraminifera (Millioida, Discorbidae, Nonionidae and Spirillinidae), worm tube (Sedentaria), algae and stromatolites. Judging from the data on petrology and paleontology, the area concerned was transgressed by sea waters during the Buxin epoch.

AUTHOR: LI Yuntong [2621 0061 6639]  
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TITLE: "Gastropods from the 'Xuehuashan Formation' in the Jingxing District, Hebei Province, and Their Stratigraphical Significance"

SOURCE: Beijing DIZHI XUEBAO [ACTA GEOLOGICA SINICA] in Chinese Vol 54 No 4, Nov 80 pp 260-274

TEXT OF ENGLISH ABSTRACT: The "Xuehuashan formation" was assigned in 1930 to Pliocene by Wang Zhuquan on the basis of the physiography of north China. Gastropods collected by Wang from this formation were studied by Ping Chi who referred the said formation to the Lower Pliocene. The authors recollected and examined the gastropods from the same formation and found 19 species belonging to 7 genera, of which 7 new species are erected. Found in this gastropod assemblage have been Pupilla triplicatoides Steklov and Gastrocopta (Sinalbinula) conturbata Steklov, which are known from the Middle Miocene of Europe and central Asia. In addition, a number of genera and species discovered here are close to those of the Middle Miocene in the Precaucasus, described by Steklov. Consequently, the "Xuehuashan formation" is assigned to the Miocene.

AUTHOR: JIANG Peimo [3068 1014 6206]

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TITLE: "The Calculation Equilibrium Temperatures of the Ore-Bearing Rocks of the Fe-P Ore Deposits in Fanshan, Hebei, and Its Geological Significance"

SOURCE: Beijing DIZHI XUEBAO [ACTA GEOLOGICA SINICA] in Chinese Vol 54 No 4, Nov 80 pp 275-283

TEXT OF ENGLISH ABSTRACT: The equilibrium temperatures of diopside-clinoenstatite and diopside-magnetite in the different igneous rock zones of Fe-P deposits in Fanshan, Hebei, have been calculated by thermodynamic methods. The calculated temperatures coincide with the decrepitative temperatures of apatite, which are determined by decrepitation of fluid inclusions. Although the calculated temperatures of the rock zones show a small divergence in a few cases, the results of these studies indicate, on the whole, that the equilibrium temperature of apatite rock is the lowest, while that of the overlying and underlying zones increases gradually.

AUTHOR: DONG Zhenxin [5516 2182 0207]  
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TITLE: "The Typomorphic Characteristics of Chromites from Kimberlites in China and the Significance in Exploration of Diamond Deposits"

SOURCE: Beijing DIZHI XUEBAO [ACTA GEOLOGICA SINICA] in Chinese Vol 54 No 4, Nov 80 pp 284-299

TEXT OF ENGLISH ABSTRACT: Dealing with chromites from kimberlites in China, this paper gives the conclusions based on measurements of their physical properties (for example,  $a_0$ ,  $N$ ,  $D$ ), more than 110 chemical analyses and over 60 electron probe analyses.

The physical and chemical properties of chromites from kimberlites vary in a wide range depending upon a number of parameters and they are obviously distinct from the chromites in other similar rocks. Properties of chromites in kimberlites vary in different areas, or in different diamond-bearing kimberlite zones in the same area, hence chromite is of significance in the exploration of diamond deposits.

The chromite from kimberlite is high in  $Cr_2O_3$ , low in  $Al_2O_3$  and the ratio of

$\text{Cr}/(\text{Cr} + \text{Al}) > 55$  percent. The richer in diamond the kimberlite is, the higher ratio  $\text{Cr}/(\text{Cr} + \text{Al})$  in chromite. In China the ratio  $\text{Cr}/(\text{Cr} + \text{Al})$  in chromites from kimberlites poor in diamond or without diamond is 55-80 percent, but the ratio in chromites from those rich in diamond is  $> 80$  percent. In similar rocks, this ratio in nearly all chromites is  $< 80$  percent. The analysis of  $\text{Fe}^{3+}$  shows that the chromites from the diamond-rich kimberlites are mostly  $\text{Fe}^{3+}$  rich varieties, while those from the kimberlites poor in or without diamond and similar rock are mainly  $\text{Fe}^{3+}$ -low varieties. Moreover, the ratio  $\text{Mg}/(\text{Mg} + \text{Fe}^{2+})$  of the former is found to be  $< 65$  percent, but that of the latter varies greatly, some being  $> 65$  percent. As for the physical properties, the most distinct feature of chromites in the kimberlites is their high  $a_0$ , generally  $> 8.26 \text{ \AA}$ . Moreover, the chromites in the kimberlites are distinct from the others in having higher refractive indices (over 2.110), specific gravities ( $> 4.4$ ) and higher reflective indices.

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LUO Mingjiu [5012 6900 3773]  
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TITLE: "Basic Geologic Features and the Chief Controlling Factors of a Porphyry Molybdenum Ore Belt in West Henan Province"

SOURCE: Beijing DIZHI XUEBAO [ACTA GEOLOGICA SINICA] in Chinese Vol 54 No 4, Nov 80 pp 300-309

TEXT OF ENGLISH ABSTRACT: The porphyry molybdenum ore belt in western Henan under study is a distinctly altered, zonally mineralized polymetallic ore zone of excellent prospect, which measures more than 100 km long by 15-25 km wide, forming a NW-trending rectangle. Tectonically, it lies in the compound portion of the complex Qinling latitudinal tectonic zone and the Neocathaysian Taihang first-order uplift belt. It is bounded on the south by the late Yanshanian granite batholith (95 m.y.), while in its central and northern parts there occurs a series of small masses of early Yanshanian (170 m.y.) granite porphyry, diorite and various vein rocks of acid-intermediate composition.

A number of molybdenum ore deposits have been discovered; in the western mineralized belt the ore centers around Yechangping, while in the east it is around Nannihu, forming two sections of concentrated ore distribution. In addition, some

deposits of tungsten, iron, copper, sulfur, lead, zinc, etc., in association with the Mo-deposits, are of large and medium sizes. Dispersion elements, such as rhenium, indium, cadmium, may also reach the industrial grade.

The main controlling factors of this porphyry molybdenum ore belt depend on the character of the magmatic activities and conditions of occurrence in the area concerned. The widespread significance is that the molybdenum-mineralization is closely related to the Yanshanian small hypabyssal intrusive bodies which are highly acidic, alkali and potash-rich. In time and space both the rock-forming and ore-forming processes are structurally controlled. Ore-belts, ore-fields and ore deposits are respectively subject to the influence of combination, arrangement, scale and nature of the tectonic system. However, there is no selection of age and lithology of country rocks during molybdenum mineralization in this ore belt.

AUTHOR: DU Qi [2629 3823]

ORG: No 4 Geological Team, Geological Bureau of Heilongjiang Province

TITLE: "The Alteration and Mineralization Features of the Duobaoshan Porphyry Copper Deposit"

SOURCE: Beijing DIZHI XUEBAO [ACTA GEOLOGICA SINICA] in Chinese Vol 54 No 4, Nov 80 pp 310-323

TEXT OF ENGLISH ABSTRACT: The Duobaoshan porphyry copper deposit is located within a composite stock, which is chiefly a medium-grained granodiorite with a K-Ar age of 292 m.y. (Late Carboniferous) and contains plagioclase-granitic stocks.

The accompanying alteration rock-association contains a quartz core, an inner zone of quartz-perthite-biotitization, a middle one of sericite-chlorite-quartz composition and an outer zone of propylitic alteration. The ore mineralization is restricted to the sericite-chlorite-quartz alteration zone, and it is controlled by spacing and orientation of the fractures, especially by intersecting fractures and faults.

Within the sericite-chlorite-quartz zone bornite appears to be concentrated chiefly in the central part, while the content of chalcopyrite increases from the central part outward, but abruptly diminishes near the periphery, leaving the pyrite as the predominant mineral.

Telescopic and overlapping sequences of alteration mineral and sulfide assemblages are evident around the quartz core; an early quartz-perthite-biotite alteration with low molybdenite-chalcopyrite-pyrite mineralization is pervasively developed. Superposed on it is the strong sericite-chlorite-quartz alteration with associated chalcopyrite-bornite mineralization. These are, in turn, superposed by strong carbonate alteration with associated late carbonate-quartz-bornite-chalcopyrite veinlets.

After the formation of the copper ore zone, whenever it was intruded by late intrusives and superimposed by fractures and faults, the remobilization of existing copper mineralization more or less occurred corresponding to each event, and the copper tenor either increased or decreased.

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TITLE: "Geochemistry of Salt-Bearing Deposits in Basin Q, Hubei Province"

SOURCE: Beijing DIZHI XUEBAO [ACTA GEOLOGICA SINICA] in Chinese Vol 54 No 4, Nov 80 pp 324-333

TEXT OF ENGLISH ABSTRACT: The geochemical characteristics of the distribution of both bromine and the original brines in salt-bearing basin Q were studied for the purpose of revealing the environments, formation conditions and the developing processes of salt-bearing deposits. This is beneficial to the prognostic study of potassium-magnesium salt deposits and has already obtained quite good results.

This preliminary investigation suggests that when the salt-bearing formation of group q was deposited, it was confined to a continental salt basin of sodium sulfate type, and soluble salts accumulated steadily in this rather large enclosed lake basin, resulting in a great thickness of salt-bearing formation. Under conditions of multicycles, sodium chloride and sulfate were continuously precipitated and at the same time potassium-magnesium-bromine-ions can be enriched in the lake

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brine, leading to the possible crystallization of potassium-magnesium salt from those oversaturated brines. The authors, therefore, have clarified preliminarily the mineral paragenesis, and the mechanism for the formation of sodium sulfate type brine; in addition, they have proposed a new model for potassium-salt precipitation in the continental salt lakes.

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TITLE: "On Coupling Equation of Wave Propagation in the Inhomogeneous Plasma"

SOURCE: Beijing DIQIU WULI XUEBAO [ACTA GEOPHYSICA SINICA] in Chinese Vol 23  
No 4, Oct 80 pp 343-352

TEXT OF ENGLISH ABSTRACT: Starting from Maxwell's equations and the moment's equations, we have derived the coupling equations of electromagnetic and electroacoustic waves in inhomogeneous compressible plasmas with electron density gradient under the action of external fields. Then the perturbation solution of electromagnetic and electroacoustic wave coupling equations is presented. Finally, a discussion is given on the coupling excitation mechanisms of electromagnetic and electroacoustic waves in such plasmas, showing that the coupling between different modes is the cause of their mutual transformation and the excitation process of these waves in homogeneous and compressible plasmas given by Cohen is only a special case of the present results.

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TITLE: "On the Vertical Dynamic Transport and Its Effects in the Upper Mesosphere and Lower Thermosphere"

SOURCE: Beijing DIQIU WULI XUEBAO [ACTA GEOPHYSICA SINICA] in Chinese Vol 23  
No 4, Oct 80 pp 353-367

TEXT OF ENGLISH ABSTRACT: A formula for vertical dynamic transport function is deduced from the molecular kinetic theory of gases. Instead of Nicolet-Mange's "mixing ratio," this formula can describe successfully the transition process from mixing to separation conditions in the upper atmosphere. Considering the observational data of turbulence motion in the upper atmosphere, the distribution models of the diffusion coefficient with height are presented, according to which the height distribution profiles of number density ratio, such as  $n(\text{Ar})/n(\text{N}_2)$ ,  $n(\text{He})/n(\text{N}_2)$ , are calculated and compared with the rocket-borne mass-spectrometer's data. The distributions of main chemical components with height in the upper mesosphere and lower thermosphere are computed according to photochemical-dynamical transport theory. It is concluded that the photodissociation coefficient is coupled with number density profiles of molecular oxygen, and the system of equations involved must be solved numerically from upper to lower heights, in order to diminish the errors arising from the assumption of the photodissociation coefficient in computations.

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TITLE: "The Excitation Temperature of the Fine Structure Levels of the  $^3P$  Ground State of Atomic Oxygen in the Thermosphere"

SOURCE: Beijing DIQIU WULI XUEBAO [ACTA GEOPHYSICA SINICA] in Chinese Vol 23 No 4, Oct 80 pp 368-375

TEXT OF ENGLISH ABSTRACT: In this paper, the effect of collisions of oxygen atoms in the thermosphere with electrons and neutral particles on the population of oxygen atoms in the fine structure levels of the ground state  $2p^4\ ^3P$  is discussed. The excitation temperature of the fine structure levels at heights between 140 and 400 km was calculated for both night and day conditions in the 750K and 2000K model thermospheres. In the calculation, a series of values for the equivalent cross section for neutral particles impact de-excitation of  $^3P_1$  level was adopted. Based on Takao Tohmatsu's suggestion derived from the study on the intensity ratio of the OI 1302 Å triplet in the day airglow, the lower limits of excitation temperature for various thermospheric conditions have been obtained.

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TITLE: "General Features of the Stress Field in the Crust of North China"

SOURCE: Beijing DIQIU WULI XUEBAO [ACTA GEOPHYSICA SINICA] in Chinese Vol 23 No 4, Oct 80 pp 376-388

TEXT OF ENGLISH ABSTRACT: The study of the stress field in the crust is a basic problem in earthquake study. The general features of the stress field in the crust under north China ( $\varphi$  30-41°N,  $\lambda$  105-124°E) were obtained from analysis of the following data: (1) earthquake mechanisms which include fault plane solutions of earthquakes which occurred during the period 1937-1979 and composite fault plane solutions of weaker earthquakes in a period of more than 10 years; (2) earthquake fractures appearing on the earth's surface at the time of earthquakes; (3) the directions of major axes of isoseismals of 41 earthquakes of  $M \geq 6$  in the time period from 143 to 1976; (4) geodetic results in regions of some major earthquakes. This is a fairly consistent stress field in which the maximum compressional axis is in the northeast-east direction and the minimum axis is in the north-northwest direction, both axes being nearly horizontal.

From the observations of several great earthquakes, the extent of this consistent stress field is larger than north China. For areas considerably removed from

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north China, the stress field in the crust is essentially the same, showing that the origin of the stress field is not restricted to the crust of north China but to the tectonic movement on a much larger scale. The interactions between the Eurasian Plate, the Indian Plate and the Pacific Plate and the particular location of north China which is far from the margins of the plates are probably the main causes of the characteristics of the stress field in the crust of north China.

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TITLE: "A Practical Scheme on the Computation of Synthetic Seismogram Using the 'Reflectivity Method'"

SOURCE: Beijing DIQIU WULI XUEBAO [ACTA GEOPHYSICA SINICA] in Chinese Vol 23 No 4, Oct 80 pp 389-395

TEXT OF ENGLISH ABSTRACT: In this paper an effective practical scheme with regard to computing speed and storage is proposed for the calculation of body wave synthetic seismogram using the reflectivity method. Examples of synthetic seismograms corresponding to three crust models are given in the paper.

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TITLE: "Short Periodic Induction Field of Geomagnetic Storms on Zo-Se and Electrical Conductivity in the Upper Mantle Beneath this Region"

SOURCE: Beijing DIQIU WULI XUEBAO [ACTA GEOPHYSICA SINICA] in Chinese Vol 23 No 4, Oct 80 pp 396-402

TEXT OF ENGLISH ABSTRACT: Geomagnetic storm-time variations observed at Zo-Se are analyzed for the study of the inductive response of the upper mantle. Some hidden periods ranging from 10-120 min are discovered after using the periodgraph technique. Among these, two distinct penetrating periods are estimated in accordance with a one-dimensional multistratifying model. It may be defined, from the first penetrating period, that the penetrating depth is about 90 km, with which the top of the high conductive stratification of the upper mantle is just in correspondence. It may also be estimated, from the second penetrating period, that the thickness of high conductive stratification is 42 km, between which and the upper one the conductivity ratio is about 17.

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TITLE: "Archaeomagnetic Research of Jiangzhai Relic, Neolithic Epoch"

SOURCE: Beijing DIQIU WULI XUEBAO [ACTA GEOPHYSICA SINICA] in Chinese Vol 23 No 4, Oct 80 pp 403-414

TEXT OF ENGLISH ABSTRACT: Some new results of archaeomagnetic research on the baked earth specimens from the Jiangzhai relic of Neolithic age are reported in this paper. The direction of the geomagnetic field at about 3900 BC in the Lingtong region where this relic is located was determined. The position of the virtual geomagnetic pole for this period was deduced according to the geocentric dipole model. The paleo-intensity was determined by using the Thellier method. The virtual dipole moment (VDM) and the corresponding reduced dipole moment (RDM) were also calculated for this epoch.

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TITLE: "Magnetic Fields of Uniformly Magnetized Polyhedra"

SOURCE: Beijing DIQIU WULI XUEBAO [ACTA GEOPHYSICA SINICA] in Chinese Vol 23 No 4,  
Oct 80 pp 415-426

TEXT OF ENGLISH ABSTRACT: The magnetic fields of uniformly magnetized polyhedra are studied, and normalized expressions for evaluating their vertical, horizontal and total intensity anomalies ( $Z_a$ ,  $H_{ax}$ ,  $H_{ay}$  and  $\Delta T$ ) are derived. As an example for illustration, the process is given of reducing it to the equation of the magnetic anomalies of a plate with limited dimensions.

The magnetic anomalies of polyhedra are represented in this normalized expression as the functions of their magnetic parameters and the coordinates of their corner points. Since it is a twofold summation of the sides and faces of the polyhedron, this expression will be very convenient for operating on the computer.

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TITLE: "Propagation of Elastic Wave in a Cylindrical Bore Hole Containing a Fluid for Acoustic Logging"

SOURCE: Beijing DIQIU WULI XUEBAO [ACTA GEOPHYSICA SINICA] in Chinese Vol 23 No 4,  
Oct 80 pp 427-437

TEXT OF ENGLISH ABSTRACT: The propagation of an elastic wave in a cylindrical bore hole containing a fluid (for example, the muddy fluid is generally used) for acoustic logging is analyzed with a simplified model. Such a wave field may be looked upon as the superposition of partial waves which are classified according to different wave vectors along the axis of the hole. It is shown that, for the infinitely deep bore hole with single uniform rock layer outside it, the so-called "head wave" with maximum phase velocity  $v_{zm} = c_2$  exists only for characteristic frequencies as shown in the formula, and partial waves with phase velocity  $v_z > c_2$  and  $c_2 > v_z > b_2$  are forbidden. Here,  $c_2$  and  $b_2$  are the longitudinal and transversal wave velocities in the rock layer outside the hole respectively. This result may be used to explain the so-called "filtering effect" of the hole as reported by Crawford, et al. It is also shown that, for the hole with more than one rock layer outside it, a "head wave" which has similar properties described above is present only under certain conditions.

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TITLE: "Seismic Modeling for Complicated Subsurface Structures"

SOURCE: Beijing DIQIU WULI XUEBAO [ACTA GEOPHYSICA SINICA] in Chinese Vol 23 No 4, Oct 80 pp 438-449

TEXT OF ENGLISH ABSTRACT: Seismic modeling is an important theoretical problem in seismic prospecting. This paper presents a modeling system in which ray tracing procedures are used to calculate the two-dimensional synthetic seismogram, with finite elements representing complicated subsurface structures, thus producing their theoretical section. The system can be applied to the modeling of lithology or geological structures, which would offer useful information for the interpretation. A general program for computing arbitrary complicated structures has been prepared. It proved effective in calculating a series of models for a certain seismic profile. These synthetic sections were displayed on television. The paper ends with a brief discussion and analysis of the results thus obtained.

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TITLE: "Preliminary Study of the Relation Between a Kind of Pressure Wave in the Atmosphere and Earthquakes"

SOURCE: Beijing DIQIU WULI XUEBAO [ACTA GEOPHYSICA SINICA] in Chinese Vol 23 No 4, Oct 80 pp 450-458

TEXT OF ENGLISH ABSTRACT: An observational result of the relation between a kind of pressure wave in the atmosphere and local earthquakes is reported.

The period of the pressure waves is between tens and 500 seconds; its amplitude is between 5 and 100 Pa; the dominant period of the waves changes very little. The waves occur in groups, each consisting of three to five waves. The identification of the waves is easy, because their waveform is smooth. The order of magnitude of horizontal phase speed for these waves is 10 m/s, and the waves are transverse.

For the local earthquakes studied in this report, about 70 percent of them were preceded by such low frequency pressure waves within 30 hours before the earthquake event.

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